

Segment EVPN

draft-li-l2vpn-segment-evpn

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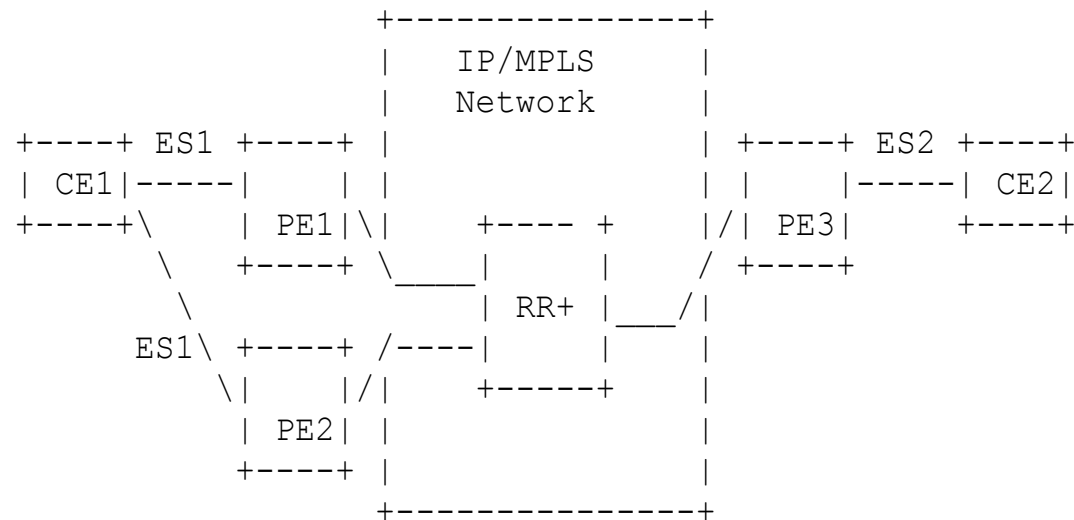
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About This Draft

- Propose an enhanced EVPN solution: S-EVPN
 - It satisfies the PBB-EVPN requirements w/o PBB implementation on PE
 - It uses EVPN protocol and IP/MPLS only
- Describe pain points in PBB-EVPN implementation and operation

S-EVPN Solution Highlight

- Use Ethernet Segment to every CE including single-homed CE
 - EVPN only has Ethernet Segment for multi-homed CE
- Have a unique Ethernet Segment Identification (ESI) and an Ethernet Segment global label for each Ethernet Segment
 - Rule for generating ESI for single-homed CE is specified
 - RR is used to assign the ES global labels



S-EVPN Solution Highlight Cont.

- Ingress PE inserts the EVI and source ES global label on packets

-----+	-----+	-----+	-----+
Tunnel Label	EVI Label	Source ES Global Label	Payload
-----+	-----+	-----+	-----+

Packet Format in S-EVPN

compared to PBB-EVPN:

-----+	-----+	-----+	-----+	-----+	-----+	-----+	-----+	-----+
Tunel	MAC			Ether		Ether		
Label	Label	B-DA	B-SA	Type	B-VID	Type	I-Tag	Payload
				0x88A8		0x88E7		
-----+	-----+	-----+	-----+	-----+	-----+	-----+	-----+	-----+

Packet Format in PBB-EVPN

- Egress PEs learn these in the data plane
 1. C-MAC and possible VLAN Tag in the payload binding
 2. C-MAC and EVI binding
 3. C-MAC and Source Ethernet Segment binding
- Egress PEs build a forwarding table based on dp learning/cp info.
 - No need control plane advertisement on C-MAC (like PBB-EVPN)

S-EVPN Solution Highlight Cont.

- S-EVPN improves EVPN split horizon function by:
 - Use ES global label in split horizon function instead of ESI labels
 - Mechanism works in both P2MP and MP2MP
 - EVPN has an issue in MP2MP case
 - Greatly simplify the implementation
- S-EVPN implements other EVPN functions in the same way to support:
 - Fast Convergence
 - Multi-homing (active-standby, all-active)
 - Multicast transport
 - Aliasing (CP) and load balancing (DP)
 - MAC mobility
- S-EVPN gains the encapsulation efficiency and likely implementation as EVPN compared to PBB-EVPN
 - Support PBB-EVPN requirements

Next Step

- Seek some comments and feedbacks
- Should we add this work item to the WG?